

## CLAIMS

We claim:

1                   1.     A method of constructing a model for estimating electrical  
2 characteristics for an extraction sub problem, said method comprising:  
3                   identifying a set of physical measurements that define said extraction sub  
4                   problem;  
5                   selecting a set of training cases for said specific extraction sub problem, each of  
6                   said training cases including an associated set of said physical measurements;  
7                   solving said specific extraction sub problem for each of said training cases using  
8                   said associated set of physical measurements as an input to an accurate physics  
9                   based model to generate an associated output; and  
10                  training a machine-learning model with Bayesian inference using said associated  
11                  set of physical measurements and associated outputs as training data.

1                   2.     The method as claimed in claim 1 wherein said electrical  
2 characteristic comprises capacitance.

1                   3.     The method as claimed in claim 1 wherein said electrical  
2 characteristic comprises resistance.

1                    4.        The method as claimed in claim 1 wherein said extraction sub  
2       problem comprises a section of interconnect wire and nearby interconnect wiring within a  
3       define halo.

1                    5.        The method as claimed in claim 1 wherein said extraction sub  
2       problem comprises a section of interconnect wiring.

1                    6.        The method as claimed in claim 1 wherein one of said set of  
2       physical parameters comprises a spacing between a pair of interconnect lines.

1                    7.        The method as claimed in claim 1 wherein one of said set of  
2       physical parameters comprises a wire width.

1                    8.        The method as claimed in claim 1 wherein one of said set of  
2       physical parameters comprises a wire length.

1                    9.        The method as claimed in claim 1 wherein selecting a set of  
2       training cases comprises randomly generating input parameters with a gamma probability  
3       distribution.

1                    10.     The method as claimed in claim 1 wherein said electrical  
2     characteristic comprises delay.

1                    11.     The method as claimed in claim 1 wherein said machine-learning  
2     model comprises a neural network.